We Claim:

1. A compound having the formula

$$R_1 - A' - Y' - Leu - X' - Z' - B' - R_2 \quad (I)$$

in which

X´ means any group or amino acid imparting to the compound of formula (I) the ability to bind to the KLVFF-sequence in amyloid β peptide, or two amino acids imparting the same ability, but with the proviso that one is not proline;

Y´ means any amino acid;

Z´ means any non-acidic amino acid;

A´ means a direct bond or an α-amino acid bonded at the carboxyl terminal of the α-carboxygroup or a di-, tri-, tetra- or pentapeptide bonded at the carboxyl terminal of the α-carboxy group;

B´ means a direct bond or an α-amino acid bonded at the α-nitrogen or a di-, tri-, tetra- or pentapeptide bonded at the α-nitrogen of the N-terminal α-amino acid; R_1 is H or -CO-R_3 bonded at the α-amino group of A´; R_2 is H, -OR_4 or NR_5R_6, all bound to the α-carboxyl group of the a-carboxyterminal of B´;

R_3 is a straight or branched carbon chain of 1-4 carbon atoms;

R_4 is a straight or branched carbon chain of 1-4 carbon atoms;

R_5 and R_6 independently are H, alkyl, cycloalkyl, aryl or substituted aryl or together are -$(CH_2)_n$-, where n is 4-5;

R_1 and R_2 together can form a hydrocarbon ring or heterocyclic ring; and

all the α-amino acids can be either D- or L-isomers; with the proviso that (I) is not Lys-Leu-Val-Phe-Phe, which exhibits an ability to inhibit polymerization of amyloid β peptide.

2. A compound according to Claim 1, wherein all the amino acids are D-isomers.

3. A compound according to Claim 1, wherein Y´ is Lys.

4. A compound according to Claim 2, wherein Y´ is Lys.

5. A compound according to Claim 3, wherein Y´ is Lys and Z´ is Phe.

6. A compound according to Claim 1, wherein Y´ is Phe.

7. A compound according to Claim 2, wherein Y´ is Phe.

8. A compound according to Claim 1, wherein X´ is Val-Val.

9. A compound according to Claim 1, wherein R_1 is acetyl.

10. A compound according to Claim 1, wherein R_1 is H and/or R_2 is H.

11. Use of a compound of formula

$$R_1 - A' - Y' - Leu - X' - Z' - B' - R_2 \quad (II)$$

in which

X´ means any group or amino acid imparting to the compound of formula (II) the ability to bind to the KLVFF-sequence in the amyloid β peptide, or two amino acids imparting the same ability, but with the proviso that one is not proline;

Y´ means any amino acid;

Z´ means any non-acidic amino acid;

A´ means a direct bond or an α-amino acid bonded at the carboxyl terminal of the α-amino acid bonded at the carboxyl terminal of the α-carboxygroup or a di-, tri-, tetra- or pentapeptide bonded at the carboxyl terminal of the α-carboxy group;

B´ means a direct bond or an α-amino acid bonded at the α-nitrogen or a di-, tri-, tetra- or pentapeptide bonded at the α-nitrogen of the N-terminal α-amino acid;

R_1 is H or -CO-R_3 bonded at the α-amino group of A´;

R_2 is H, -OR_4 or NR_5R_6, all bound to the α-carboxyl group of the α-carboxyterminal of B´;

R_3 is a straight or branched carbon chain of 1-4 carbon atoms;

R_4 is a straight or branched carbon chain of 1-4 carbon atoms;

R_5 and R_6 independently are H, alkyl, cycloalkyl, aryl or substituted aryl or together are -$(CH_2)_n$-, where n is 4-5;

R_1 and R_2 together can form a hydrocarbon ring or heterocyclic ring;

all the α-amino acids can be either D- or L-isomers;

for inhibition of polymerization of amyloid β peptide-ligands for inhibition of polymerization of amyloid β peptide, as a tool for the identification of other organic compounds with similar functional properties or as a ligand in PET (positron emission tomography).

12. Use according to Claim 11, wherein all the amino acids of the compound are D-isomers.

13. Use according to Claim 9, wherein 20 Y´ is Lys.

14. Use according to Claim 13, wherein Y´ is Lys and Z´ is Phe.

15. Use according to Claim 11, wherein Y´ is Phe.

16. Use according to Claim 11, wherein X´ is Val-Val.

17. Use according to Claim 11, wherein R_1 is acetyl.

18. Use according to Claim 11, wherein R_1 is H and/or R_2 is H.

19. A compound according to Claim 1 for use as a medicament.

20. Use of a compound according to Claim 1 for the manufacture of a medicament for the treatment of prevention of amyloidosis.

21. Use of a compound according to Claim 1 for the manufacture of a medicament for the treatment of prevention of Alzheimer disease associated with amyloidosis.

22. Use of a compound according to Claim 1 for the manufacture of a medicament for the treatment or prevention of demens in patients with Down´s syndrome.

23. Use of a compound according to Claim 1 for the manufacture of a medicament for the treatment or prevention of Hereditary cerebral hemorrhage with amyloidosis (Dutch type).

24. Use of a compound according to Claim 1 for the manufacture of a medicament for the prevention of fibril formation of human amyloid protein.

25. A composition comprising a compound according to Claim 1 and optionally a ligand capable of binding or interacting with the compound according to formula I and a carrier.

26. A composition according to Claim 25, which is adapted for injection or oral administration.